



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|------------------------|-------------|----------------------|------------------------|------------------|
| 10/530,384 | 04/06/2005 | Frank Neumann | HH 304-KFM | 4881 |
| 10037 | 7590 | 08/30/2007 | EXAMINER | |
| MILDE & HOFFBERG, LLP | | | NDUBIZU, CHUKA CLEMENT | |
| 10 BANK STREET | | | | |
| SUITE 460 | | | ART UNIT | PAPER NUMBER |
| WHITE PLAINS, NY 10606 | | | 3749 | |
| | | | MAIL DATE | DELIVERY MODE |
| | | | 08/30/2007 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | |
|------------------------------|------------------------|---------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/530,384 | NEUMANN ET AL. |
| | Examiner | Art Unit |
| | Chuka C. Ndubizu | 3749 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 07 June 2007.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-24 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Receipt of Applicant's amendments filed on June 7 2007 is hereby acknowledged.

Oath/Declaration

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

It does not state that the person making the oath or declaration acknowledges the duty to disclose to the Office all information known to the person to be material to patentability as defined in 37 CFR 1.56.

Specification

The disclosure is objected to because of the following informalities: On pages 4 and 5 of the Amendments to the Specifications, Applicant seems to be referring to page 7 instead of to page 8.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
1. Claim 1, 3, 4 9, 10 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deakin 5,167,218. Deakin teaches the invention as claimed (see figs. 2-11) a solar collector comprising, a sheet metal panel (20, 27+26 (fig 6)) having two sides (side facing away from insulation and side facing insulation 11) and adapted to be irradiated by sunlight on the side facing away from insulation (column 2 line 45-47), a register-shaped arrangement (Fig 4) of capillary tubes (16, 57 in fig 11) separated from one another at a distance for the flow of a fluid medium (column 7 line 30-33), said arrangement being positioned on the side opposite the side of the sheet metal panel (17, 20) to be irradiated (column 2 line 44,45), and a thermally insulating insulation core (11) that is also positioned on the opposite side of the sheet metal panel to be irradiated; wherein the capillary tubes of the register-shaped arrangement are placed in contact with the surface (18 in fig 4) of the thermally insulating insulation core, the insulating insulation core is bonded to the sheet metal panel (column 5 line 49-52) by means of a non-metallic elastic adhesive layer (21, 23) (epoxy and polyester resin are non-metallic (column 4 line 12-14)); capillary tubes are at least partially embedded into the adhesive layer 21 between the sheet metal panel 20 and the insulation core (11 see

fig 5); wherein each of the capillary tubes of the register-shaped arrangement is placed into a slot (25 in fig 5) worked into the insulation core (11), whereby the capillary tubes extend above the insulation core by some amount; wherein the surface of the insulation core is flat, and that the capillary tubes are laid directly onto the flat surface (column 7 line 29, see fig 3); wherein the insulation core comprises foam (column 4 line 67); wherein the slots (18, 25) possess a partially-round, cross-section (figs 4 and 5); wherein the capillary tubes consist of metal (aluminum and copper (column 3 line 56, 57)); wherein the side of the insulation core facing away from the sheet metal panel is supported by a plate-shaped stiffening element 4; wherein the insulation core is partially surrounded by a cassette 4 which includes two opposing margins (side of 4 see fig 4) angled outwards.

Deakin does not specifically disclose that the absorber sheet metal panel is self-supporting. However, Deakin discloses (see fig 6) that the absorber plate (26 and 27) is made of sheet metal 27 on which is sprayed a layer of molten metal 26 (column 5 line 68). The Examiner takes official notice that it is old and well known that sheet metals are generally thick enough to be self-supporting. It will be obvious to one of ordinary skill in the art to modify Deakin's sheet metal plate and make it self-supporting by having a layer of molten metal sprayed on it as taught by Deakin (column 6 line 9) in order to make that the solar collector module stronger.

2. Claims 7, 8, 11, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deakin in view of Bloor et al 4,606,327. Dearkin teaches the

Art Unit: 3749

invention as claimed and as discussed above. Deakin also teaches a solar collector wherein the adhesive layer comprises, sodium silicate and aluminum oxide (column 4 line 51,52) and these will have a higher thermal-conductivity coefficient than the material of the insulation foam (column 4 line 67).

However, Deakin does not teach a solar collector wherein the surface of the insulation includes numerous recesses to receive the adhesive; wherein the recesses extend essentially to the slot depth or extend slightly past it.

Bloor discloses a solar collector (fig 1) wherein the surface of the tiles (11) (insulation) includes numerous recesses 14; wherein the recesses extend slightly past the depth of the slot 15.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Deakin's solar collector by including all the limitations taught by Bloor and recited above in order to provide a solar collector that would be quickly mounted on roof tops with little damage to the roof as taught by Bloor (column 1 line 28-30).

With regard to claim 8, Deakin discloses the use of polyester resin and not specifically methacrylate. Methacrylate is a polyester resin and the selection of methacrylate is an obvious engineering choice. *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960. MPEP 2144.07.

With regard to claim 13, forming the recesses by pressure of a bristle roller is an obvious design choice of how to make the recesses. The Applicant does not disclose any significance of using bristle rollers.

3. Claims 2, 14, 15, 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deakin in view of Graham 4,517,721. Deakin teaches the invention as claimed and as discussed above. Deakin also teaches a solar collector wherein the insulation core (11) is partially surrounded by a plastic or metal cassette 4; (column 5 line 4, 5). However, Deakin does not teach a solar collector wherein the capillary tube extends by an amount, which essentially corresponds to the thickness dimension of a fluid adhesive layer before hardening; wherein the sheet metal panel is of one piece with two opposing angled edge profiles to connect the sheet metal panels to one another in a folded technique; wherein an elastic body is positioned between the angled margin; wherein the elastic body is a foam strip.

Graham discloses a solar heat exchanger (fig 1-7), comprising a one-piece sheet metal plate 10 with two opposing angled edge profiles (see fig 7); wherein an elastic body 13 is positioned between the angled margin; wherein the elastic body 13 is a foam strip (rubber).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Deakin's solar collector by including all the limitations taught by Graham and recited above in order to provide a solar heat exchanger that can be manufactured economically as taught by Graham (column 1 line 25)

With regard the recitations "to connect the sheet metal panels to one another in a folded technique" in claim 15 and "to receive the adhesive" in claim 11, these are regarded as statements of intended use. *In re Otto*, 312 F.2d 937, 938 136 UPSQ 458, 459 (CCPA 1963). MPEP 2111.02 II.

With regard to the recitation "capillary tube extends by an amount, which essentially corresponds to the thickness dimension of a fluid adhesive layer before hardening", this limitation is regarded as a design choice since the applicant does not disclose any criticality for limiting the amount the tube should extend. In Deakin's invention the tubes extend enough such that the adhesive can hold the plate and the collector is functional.

4. Claims 5, 6 and 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deakin in view of Hyman 4,191,169. Deakin teaches the invention as claimed and as discussed above. Deakin also discloses a sheet metal plate made of aluminum (column 3 line 54, 55). However, Deakin does not teach a solar collector wherein the sheet metal panel consists of a titanium-zinc alloy; wherein the insulation core comprises fibrous material; wherein the insulation comprises foamed polystyrene or polyurethane; wherein the collector possesses an overall thickness, including insulation core, of between 10 mm and 50 mm, preferably between 25 mm and 35 mm; wherein the collector module is installed in a stair step roof, whose surface consists of sheet metal panels connected to one another.

Hyman discloses a solar collector (fig 3), wherein part of the insulation core comprises fibrous material (column 4 line 13-16) and part of the core 40 comprises polystyrene; wherein the insulator thickness is of the order of 3 inches (75 mm) (column 4 line 18).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Deakin's solar collector by including the limitations taught by Hyman and recited above in order to provide a solar collector unit that is rigid and lightweight as taught by Hyman (column 4 line 39-41).

With regard to claims 21 and 23 the overall thickness of the module being in the range of 10-50 mm or 25-35 mm, this is deemed an optimization within prior art conditions. Hyman discloses insulation thickness of about 75 mm (by way of example) and since the metal absorber is very thin (order of 0.1 mm (Deakin, column 3 line 56)) the overall thickness of the collector is of the order of 75 mm. 50 mm is of the order of 75 mm. Therefore, the limitation that the thickness be between 10 and 50 mm or between 25 mm and 35 mm is within the general range of 75 mm. "where the general condition of a claim is disclosed in prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) MPEP 2144.05 II A.

With regard to claim 20, the sheet metal being made of titanium-zinc alloy, this is deemed an engineering design choice since the applicant does not disclose the need for using titanium-zinc alloy, which other materials cannot meet. Deakin discloses the use of a sheet metal plate made of aluminum (column 3 line 54, 55).

With regard to claim 22 the collector module being installed in a stair step roof, whose surface consists of sheet metal panels connected to one another, this is a statement of intended use, which has not introduced any additional limitations on the

structure of the collector. *In re Otto*, 312 F.2d 937, 938 136 UPSQ 458, 459 (CCPA 1963). MPEP 2111.02 II.

5. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Deakin in view of Kataoka et al 5,389,159. Deakin teaches the invention as claimed and as discussed above except for an adhesive layer that is made of a reaction adhesive. Kataoka discloses in a solar cell module, an insulation layer 103 that is attached to a plate using a reaction-settable adhesive (column 7 line 10-13).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Deakin's solar collector by including all the limitations taught by Kataoka and recited above in order to provide a solar module that is flexible and capable of withstanding thermal expansions and contractions as taught by Kataoka (column 6 line 55-57).

Response to Arguments

Applicant's arguments filed on June 7, 2007 have been fully considered but they are not persuasive. Applicant's argument traversing the rejection of claim 1 on the grounds that prior art does not disclose self-supporting metal sheet and non-metallic adhesive layer has been considered. Deakin does not specifically disclose that the absorber sheet metal panel is self- supporting. However, Deakin discloses (see fig 6) that the absorber plate (26 and 27) is made of sheet metal 27 on which is sprayed a layer of molten metal 26 (column 5 line 68). Sheet metal plates are generally self-

supporting and a sheet metal plate with a layer of molten metal sprayed on it (to a desired thickness (column 6 line 9)) will obviously be self-supporting.

With regard to the non-metallic adhesive layer, Deakin also discloses that the insulation core is bonded to the sheet metal panel (column 5 line 49-52) by means of a layer (21, 23, fig 5) of epoxy or polyester resin (column 4 line 12-14). Epoxy is well-known non-metallic elastic adhesive.

Having considered the amendments and arguments, Applicant's claims do not distinguish Applicant's invention over the prior art of record.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chuka C. Ndubizu whose telephone number is 571-272-6531. The examiner can normally be reached on Monday - Friday 8.30 - 4.30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve McAllister can be reached on 571-272-6785. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Chuka C. Ndubizu
Patent Examiner
AU 3749

Steve McAllister
SPE
AU 3749

20070824



STEVE MCALLISTER
SUPERVISORY PATENT EXAMINER